

## REMARKS

### Rejection Under 35 U.S.C. §102

The examiner rejected claims 21 and 38 under 35 U.S.C. §102(e) as being anticipated by Lee et al. In response, applicants amended claim 21 to specify a sacrificial layer that comprises titanium nitride. Support for this amendment appears in the specification, e.g., at page 5, lines 12-21 ("Sacrificial layer 102 preferably is made from a material that may getter impurities from dielectric layer 101. An example of a suitable material is titanium nitride. . . . When sacrificial layer 102 is made from titanium nitride . . . .").

Lee does not describe a process that forms a sacrificial layer that comprises titanium nitride on a high-k gate dielectric layer, as amended claim 21 requires. Lee mentions that spacers 50 (the feature that the examiner contends corresponds to applicants' claimed sacrificial layer) may comprise silicon nitride or polysilicon. Lee does not describe forming those spacers from titanium nitride.

As disclosed in applicants' specification, applicants formed the sacrificial layer from titanium nitride to enable that layer to getter impurities from an underlying high-k gate dielectric layer. Lee does not address removing impurities from a dielectric layer. Rather, Lee formed spacers 50 to enable an exposed part of a low-k dielectric layer (e.g., a fluorinated silicon dioxide layer) to be removed. Given the entirely different functions that are performed by Lee's spacers 50 and applicants' titanium nitride sacrificial layer, it would not have been obvious to replace Lee's spacers 50, which are formed from a masking

material, with a material like titanium nitride, which may getter impurities from an underlying high-k gate dielectric layer.

Because Lee does not anticipate the methods of applicants' amended claim 21 and dependent claim 38, and because Lee would not have rendered those claimed methods obvious, applicants respectfully request the examiner to allow claims 21 and 38 over Lee.

#### **Rejection based on obviousness-type double patenting**

The examiner rejected claim 21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,806,146 B1. In response, applicants have submitted the enclosed terminal disclaimer, which disclaims the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. §§154 to 156 and 173 of prior U. S. Patent No. 6,806,146 B1.

In view of the submission of the enclosed terminal disclaimer, applicants respectfully request the examiner to withdraw the rejection of amended claim 21 under the judicially created doctrine of obviousness-type double patenting.

#### **Rejection Under 35 U.S.C. §103**

The examiner rejected claims 21 and 38 under 35 U.S.C. §103(a) as being unpatentable over Kim. Applicants' amended claim 21 specifies a sacrificial layer that comprises titanium nitride. Kim, like Lee, does not describe a process that forms a sacrificial layer that comprises titanium nitride on a high-k gate dielectric layer. Kim mentions that the layer of dummy gate electrode

material 216, and dummy gate electrodes 224/228 (the features that the examiner contends correspond to applicants' claimed sacrificial layer) may comprise silicon nitride. Kim does not describe forming those masking structures from titanium nitride.

As mentioned above, applicants formed the sacrificial layer from titanium nitride to enable that layer to getter impurities from an underlying high-k gate dielectric layer. Kim, also like Lee, does not address removing impurities from a dielectric layer. Rather, Kim formed dummy gate electrodes 224/228 to enable removal of an exposed part of gate dielectric layer 214 to form gate dielectrics 222/226. Given the entirely different functions that are performed by Kim's dummy gate electrodes 224/228 and applicants' titanium nitride sacrificial layer, it would not have been obvious to replace Kim's dummy gate electrodes 224/228, which like Lee's spacers 50 are formed from a masking material, with a material like titanium nitride, which may getter impurities from an underlying high-k gate dielectric layer.

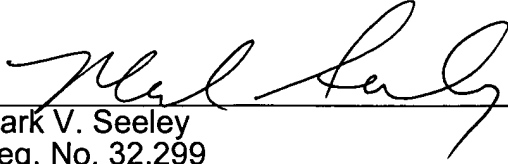
Because Kim would not have rendered the methods of amended claim 21 and dependent claim 38 obvious, applicants respectfully request the examiner to allow those claims over Kim.

## **Conclusion**

Because amended claim 21 and dependent claim 38 are patentable over the cited references, for the reasons set forth above, applicants respectfully request the examiner to enter the proposed amendment to claim 21, and to allow that amended claim and dependent claim 38 to issue over the cited references.

Respectfully submitted,

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